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Co-management of protected areas: an opportunity for all?

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Abstract

Co-management has been identified as the preferred management approach for the protection and conservation of nature flora and fauna around the world despite the ambiguity around the meaning and application of co-management in practice. While some see co-management as a panacea for solving all conservation problems, there is pressing need to critically explore the governance and management arrangements required for successful nature conservation. This article uses primary data from three protected areas in regional New South Wales (Australia), and the broader governance literature to develop a co-management implementation framework that identifies three distinct models of co-management in action; control, coordination and collaboration. The three models vary with regards to stakeholder positions, power, representations, interactions and role in delivery. This framework is beneficial for exploring the range of co-management arrangements existing, and potentially suitable for, specific management contexts and outcomes. While in its infancy, the framework provides a mental frame from which environmental managers can evaluate the applicability of alternative governance frameworks and their potential strengths and weaknesses.

Introduction

The governance of protected areas is often complex and contentious, requiring a delicate balance between conservation outcomes and community development. In implementing this balance within individual protected areas and across the broader landscape, there are often unforeseen and unintended social, cultural, economic and environmental outcomes associated with management concessions and subsequent trade-offs. While such outcomes can be positive, the real and perceived negative impact of protected area management on regional communities raises concerns amongst many local community members. Social tension regarding the expansion of protected areas within New South Wales (NSW) over recent years resulted in the NSW Legislative Council undertaking an inquiry into the management of public land in NSW in 2012-2013. The findings of this inquiry highlight the complexity, and inconsistency, of governance and management approaches to public land management (including

protected areas), and the need for new approaches that are more inclusive, transparent and localised (NSW Legislative Council, 2013). These preferred management characteristics are synonymous with co-management: the political and cultural process in which a variety of partners share roles and responsibilities for a given task (Borrini-Feyerabend 2000).

In many protected areas within NSW co-management is already being implemented, albeit in varying degrees, using multiple models and resulting in differing success. This paper explores the management of three protected areas in Western NSW rangelands, each of which, as we shall see, use a different model of co-management. The protected area case studies were explored to identify their models of co-management, including how each model influenced governance and on-ground delivery outcomes. These findings are especially pertinent given the trend towards localism across State and Federal government policy, whereby local actors become more involved in policy making and implementation to ensure optimal and relevant outcomes for their local circumstances (Evans et al. 2013). A better understanding of how co-management is being implemented in NSW protected areas will enable improved governance and management approaches that better reflect and incorporate the community interests, and encourage positive benefits from protected areas for local regions. We provide some clarity around the issue of co-management, including the development of a framework to identify different models of co-management currently in practice, and the provision of practical insights into how natural resource managers can use various forms of co-management to enhance conservation outcomes.

The paper has four sections. First, we introduce co-management, including a brief historical overview and its key assumptions. We then describe the three case study protected areas which is followed by the introduction to the various models of co-management within the co-management framework. In the final section we provide practical insights into co-management and suggest improvements to the governance of protected areas.

Co-management within protected area management

At its core, co-management is a sharing of decision-making responsibility between those who use natural resources and the state-based management authorities (Berkes 1994). This involvement of stakeholders in the decision-making process is thought to improve both the knowledge available for rule making and the legitimacy of the rule-making process (Jentoft 2000a). In turn, this ideally leads to rules that are tailored to local conditions (Ostrom et al. 1999, Basurto 2005), higher levels of compliance (Jentoft 2000c, Eggert and Ellegård 2003) and lower monitoring and enforcement costs (Abdullah et al. 1998), resulting in the enhanced success of conservation management regimes. Co-management is used in widespread applications and instances, but it has a

distinct theoretical background (for further insights see Carlsson and Berkes, 2005, Hanna 1994, Pinkerton, 1994 and Jentoft et al., 1998). Recent efforts by Borrini-Feyerabend, et al. (2013) have shown that co-management has been implemented in a large range of contexts delineating a varied set of governance arrangements.

Important to note in the discussion on co-management is that we are discussing different governance arrangements, not that co-management is any better or worse than other types of management (i.e. purely state or private). The success of any governance system is about how best it fits in achieving its outcomes within the context supplied. The literature is clear and we support that any successful governance arrangement needs: legitimacy; transparency; accountability; inclusiveness; capacity; fairness; integration; and flexibility (see for example; Biermann et al., 2009, Lemos and Agrawal, 2006, Lockwood, 2010, and Paavola, 2007).

Recently, there has been a coupling of co-management with other processes, such as adaptive management (see Armitgae, et al., 2009), or specific industries (e.g. fisheries co-management see Basurto, 2005). However, for the purpose of this paper we will focus on co-management arrangements, i.e. the governance structure(s) rather the holistic management approach. It is important to recognise that *governance* and *management* have very different meanings despite the conflation of these terms in the broader environmental management literature. As described by Bevir (2012), governance directs and/or guides management by setting policy and procedures to ensure the organisation/policy is 'well run'. Management on the other hand, implements such policies and procedures. Additionally, it is important to note that *governance* is different from *government*. Again Bevir provides clarity on this: "government refers to political institutions, governance refers to processes of rule wherever they occur" (2012:3). In the case of public land management there are essentially three tiers of organisation in operation; i) the broader policy is set predominantly within the confines of political institutions (e.g. National Parks and Wildlife Service); ii) such policy is further refined to suit the local circumstances through locally-based 'co-management' committees; and iii) the operational management activities are implemented by on ground park managers and their teams. This tiered system highlights the different levels of governance and the networks of actors in action, both important aspects of protected area management. Our focus is on tiers (ii) and (iii).

Co-management is increasingly being implemented, or trialled, to achieve conservation outcomes. Our focus is on how this can play out within a unified set of broader policy rules and institutions, e.g. a National Park System or a system of Protected Areas under the same unified rules. Protected areas are under increasing pressure to deliver multiple objectives including preservation of cultural heritage, recreation and tourism

opportunities for local communities, and the protection of their environments (Locke and Deardon, 2005). Kingsford and Biggs (2012:12) note conservation areas are a “complex range of stakeholders and their demands, values, priorities, and the multiple spatial and temporal scales involved in seeing the challenges realistically”. There has been a change in recent years to move the management of conservation areas from a purely government responsibility to a shared model with civil society or private actors (Borrini-Feyerabend, et al., 2013). Many conservation regimes have moved towards a shared model of management involving more than just government as an actor within ‘co-management’ arrangements (see Baker et al., 2012; Bawa, et al., 2011; Gleason et al., 2013; Weeks & Jupiter, 2013). While acknowledging that governance is dynamic, we see value in articulating some of the various models of co-management to highlight the relative merits of each model for specific management outcomes.

Co-management in Rangeland Protected Areas, Australia

Expansion of National Parks in Western New South Wales

Nearly three quarters of Australia is rangeland, comprising the low rainfall and variable climate arid and semi-arid areas. Rangelands include a large mix of ecosystem types including native grasslands, shrublands, woodlands and the tropical savanna woodlands which contain a wealth of biodiversity. However, landuse activities within Australian rangelands have had detrimental environmental impacts, including numerous extinctions or flora and fauna species (Australian Government, 1999). Until recently rangelands have been relatively underrepresented in the national conservation areas. However, since the early 2000’s specific acquisition of rangelands has occurred at the state level (e.g. New South Wales) where state agencies have acquired land to include in their protected area register, namely in National Parks. National Parks in NSW has two fundamental purposes; i) to provide a secure tenure for the effective and efficient conservation of natural and heritage values and, ii) the provision of opportunities for public enjoyment (i.e. recreation) (NSW Legislative Council 2013). National Parks in NSW are underpinned by a number of international and national legislative and policy commitments, including the 1992 Convention on Biological Diversity (CBD) and the 1992 national Intergovernmental Agreement on the Environment, both of which drive further expansion of protected areas across Australia.

The NSW National Parks Establishment Plan 2008 directs the priorities in expanding the NSW reserve system, and focuses on protecting poorly reserved ecosystems through the building of a Comprehensive, Adequate and Representative (CAR) public reserve system using bioregions¹ as the basis of assessment (DECC 2008). The

¹ “Bioregions (an abbreviation of ‘biogeographic regions’) are large regions of relatively similar geology, geography and geomorphology. Each bioregion supports a suite of native plants and animals distinctive from those in adjoining regions.” (DECC 2008:4)

proportion of bioregions that are protected varies across NSW due to historical and environmental outcomes (e.g. historical land clearing which resulted in fragmented native vegetation, land tenures), with reservation levels of the Western NSW bioregions assessed as being low or very low, especially when compared to Eastern and coastal bioregions (NSW Legislative Council 2013).

This poor representation of Western bioregions in the NSW reserve system has driven the rapid expansion of National Parks in Western NSW, which resulted in significant concerns regarding the social and economic impacts of land conversion on local communities (see NSW Legislative Council 2013). These concerns, coupled with the NSW2021 goals regarding greater community involvement and the provision of “opportunities for people to look after their own neighbourhoods and environments”, highlight the need for a better understanding on the governance arrangements for protected area management.

Methodology

During 2013, we undertook 22 semi-structured interviews with key community and governance leaders (e.g. local government, protected area managers, government managers, indigenous groups, community members) associated with three rangeland parks in western New South Wales as described in Table 1. Interviews lasted up to one hour, questions were developed using the literature and the researchers understanding of the context from previous studies², with questions including themes around community involvement in park management, perceived local benefits and impacts of protected area establishment, and land use history. Interviews were analysed using an adaptive theory approach (Layder 1998), where content themes were developed iteratively based on both the literature and empirical evidence. Our task was to understand the governance structures for each park and determine the perceived acceptability of each of these approaches within the local communities and the effectiveness of the approach for regional development outcomes.

The interviews highlighted substantially different co-management governance models for each of the case study protected areas, and the influence of these governance structures on the achievement of a diversity of management objectives. This are summarised in Table 1 and further explored below.

Booligal Station National Park

² Research was being undertaken in the region as part of the Murray-Darling Basin Futures Collaborative Research Network project ‘Building Sustainable Communities’ (<http://www.canberra.edu.au/murray-darling-crn/projects/sustainable-communities>)

The Booligal Station National Park is one of several new National Parks located within the Hay region. A renowned station with significant cultural values for community members from across the region, the purchase of the property and lengthy delays in opening the new park to the public created much angst within the community³. The strong community ties to local properties strengthen the community's interest in the ongoing management of Booligal Station and other protected areas within the region. However, such expectations are not being realised, with many community members perceiving that the governance and management of Booligal Station (and other new parks within the region) as being 'closed' to the public, although significant input from the local Nari Nari indigenous people is well recognised and received. Additionally there is an advisory group that meets to provide overall advice and insight to NPWS on Booligal management and a small part of the park interacts directly with a set of private landholders in a wetland – ensuring a need for close co-ordination. This advisory group is also referred to as a 'community liaison group' which is not well publicised and is perceived as being very 'hushed', with the community being predominantly unaware of the advisory group selection process. Governance of the Booligal Station, and other parks within the Hay region, is primarily based on NPWS staff and invited indigenous representatives, with a small committee of locals contacted when required. This restricted governance approach does not adequately seek greater community input, and as such contributes to the level of community concern regarding the expansion of National Parks within the region and the legitimacy of NPWS management objectives.

³ See <http://www.abc.net.au/news/2012-02-10/booligal-national-park-questions/3822338>

Table 1: Summarising three case study protected areas

	Booligal Station National Park (as part of the Lachlan Valley State Conservation Area)	Yanga National Park (as part of Murrumbidgee Valley National Park)	Mungo National Park (is 65% of the Willandra lakes World heritage Area)
Size	6,500 hectares	66,734 hectares	110,967 hectares
Date of gazetting	2010	2007	1979
Previous use	Multiple sheep/ wheat farming properties	Sheep/ wheat farm in the district	Western Lands pastoral leases, sheep farming
Conservation objectives	Preservation of current flora	Restoration of 12 different wetland types; protection of identified threatened and vulnerable flora and fauna.	Conservation of significant cultural, archaeological, and biodiversity values; provision of recreational opportunities
Governance Structure	Government with advisory group	Advisory board to government	Joint-management with Indigenous and government
Management plans currently in place	Fire Management Strategy & Pest Management Strategy	Fire Management Strategy & Pest Management Strategy	Plan of Management & all necessary (e.g. Fire)
Level of Bureaucracy	Low	Medium	High

This community contention is clear in our interview results as shown by study participants commenting on the role and the ongoing park management operations of the park:

The aim of National Parks – benefit to the public, but NO! Only for conversationalists, box thorn breeders [weeds] and wild pig breeders. No one can camp, no dogs, no fires, and you have to pay for entry. These parks used to be used regularly by the local community, [now they are] ‘land taken out of productivity and locked up tight as a drum’.

We lose out, because the properties aren’t broken up for sale, we can’t expand, also they are paying more, twice what the land is worth. Local farmers are being squeezed, we used to agist [livestock], now we can’t even walk through the land, which we always did.

It is disappointing the Parks are not open to the public. They say they will be but it costs money to have them open.

Can’t promote tourism by locking up the land. Tourism is not the answer to regional economic development – it never was and it never will be.

Interviewees also raised a number of governance concerns pertaining to issues of inclusivity, power, representation and management operations:

There is no respect from State government for local government what-so-ever. ... [Local government] trust some personnel but not the State government system. It is mostly a debacle but not the fault of the people on the ground, it is the senior managers.

Local government to National Park interactions are informal or ‘needs basis’. Local Government and community have no say in National Parks. Some Aboriginal groups have a say, especially on new input on acquisitions also cultural tours etc.

Local Government is not strong enough with National Parks – they should be hammering them to open [the parks] up for all.

I don’t know who makes decisions about national parks – we [local landholders] don’t.

The local park managers are well aware of the community concerns but feel that their hands are tied:

National Parks is so busy we haven't had time to do all the plans and get things going, we are understaffed and with new acquisitions all the time, it's hard to keep up. Once we have the management plans established we can be more involved in the community – whenever that will be!

These concerns highlight important limitations of a co-management model that limits communication. The limitation in communication leads to lack of transparency and hence restricts the broader understanding within the community of park management constraints that inhibit effective and transparent park governance and operations.

Yanga National Park

Yanga National Park was opened in 2009, after the purchase of Australia's largest sheep farm in 2005, which was followed by significant community concern⁴. The iconic Yanga Station was an important economic and cultural asset for nearby Balranald, providing substantial agricultural employment and having Aboriginal and European cultural significance. Despite the rocky start, the governance of Yanga Station is well-established, with a community advisory group in place to provide local insights in decision-making. The advisory group consists of representatives from across the range of community interests (e.g. local government, business, Aboriginal group, Field naturalists, National Parks Association and local land holders). There is also a Friends of Yanga group. volunteers with a long history and association with Yanga who come out to the park and provide tours and experiences, as well as supporting Parks activities and undertaking social networking.

Interviewees raised a number of concerns about the acquisition and management of Yanga on the Balranald community.

[Yanga National Park] has utterly destroyed our community, and others too! Half the town's income went.

National Park don't manage the area – it's just a mess of land – all overgrown, fire hazard – need to clean it up.

Yanga was a prominent property, an entity in itself, when sold locals felt betrayed, it always employed generations of people, it was almost as if the owners didn't really own it the community owned it. 4-5 generations worked here, the connections are still here, the memories are still here.

⁴ See <http://www.stockandland.com.au/news/agriculture/agribusiness/general-news/yanga-station-sale-fires-community/11059.aspx>

There are far too many national Parks for reasonable management. ... They shut the gates and people can't see them. It rains, they shut the gate. It is pathetic and gives Balranald and NPWS a bad name.

With access now provided to the public and local community, there seems to be a waning of many of the concerns and the ongoing management of the Yanga National Park providing benefits for the community, although still constrained by the complexity of the management environment:

National Parks buy local – 'its just the local people don't want to see that, or they don't understand'

Yanga does lots to work with the local community, employs full time local staff, provides seasonal employment, buys locally whenever possible, attracts tourists to the region.

There is a challenge for resourcing the national park – a clear conflict between raising money which the park gets to keep and conservation.

The current governance arrangements were raised as a concern for the local people and in achieving transparency and trust between NPWS and local communities.

Wouldn't trust Parks as far as I can kick'em'.

Yanga Parks – [they are] not interested in community opinion.

'It's not what you do – it's who you are in the local area' really important to employ local people and get local support – we are working hard to get past the local 'apathy' for what is on their doorstep.

Yanga National Park uses an adaptive management approach to management planning which is discussed, and agreed to, at the Community Advisory Group. However, this is difficult to implement due to the various tensions regarding park management objectives:

'When its dry it's a national Park, when its wet it's a public recreation area, it is also a mixed 'tenure' with the travelling stock route and commercial finishing licences (yabbies and carp) still in place, with strong built and cultural heritage and ecological significance (e.g. RAMSAR site).

On the day-to-day delivery it is all about 'pests, weeds and fire' these are all pre-planned and we use whatever resources we have available, e.g. volunteers, local funding, parks staff.

Mungo National Park

Home of the 'Mungo Man', Mungo National Park is a well-established National Park with well-developed governance approaches. Operated under a joint-management approach between the NPSW and the Aboriginal Management Committee, Mungo National Park governance is embedded in a partnership arrangement that facilitates mutual learning and recognition termed joint-management. This is a form of co-management which evolved from one with purely Aboriginal people involvement to now include local land holders, Aboriginal elders and the Council. This reciprocal arrangement provides sufficient accountability and legitimacy for both parties and the government, with the Mungo National Park management objectives and operations predominantly determined by the joint-management committee (within relevant policy, legislation and regulatory requirements).

Co-management of the Mungo National Park is seen as a positive by research participants:

The National Park is really great – they have done a lot for the Aboriginal people, work for younger people and older blokes, encouragement to look further ahead, caring for country. National Parks allows us to do all that, before they came on the scene we didn't have the money to do all this.

We are all working together to make the park better.

Black and white, we mix it all up and have a ball.

However, success is varied and depends on local conditions that acknowledge the long-term nature of protected areas and the necessity for dynamic governance arrangements:

Co-management takes time, don't rush everything through at once – take time to talk, and think and look at it again, there are different types of people involved who need to work through different issues.

We are always working together, differences can all be worked out if you sit down and talk about it, people will be reasonable. ... Makes you laugh how people change as you go through the process.

The governance of co-management

The case studies provide us with insights into the application of co-management as a governance approach within protected areas. Synthesising this material, we propose a co-management framework that places the different types of co-management 'models'

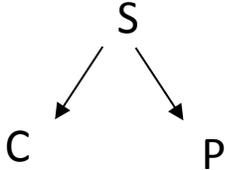
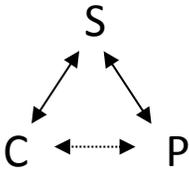
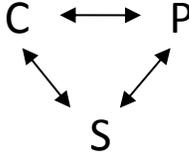
along a spectrum, from total government control to one of total shared responsibility. This framework articulates the positions, power and representation of the stakeholders in co-management arrangements, as shown in Table 2.

The three models outline specific key governance attributes of co-management. Importantly, we are not advocating a single model of co-management, rather we are advocating a consideration of the types of co-management and what this could mean in different contexts.

The co-management continuum outlined in Table 2 draws on the environmental and multi-level governance literatures. Multi-level environmental governance systems have emerged across the world, in which governance is organized at, and across, different levels and scales, involving multiple actors (government, private organisations and community) (Ostrom et al. 1961). Hysing (2009) and Driessen et al (2012) have previously defined different modes of environmental governance. We build on their contribution by using some of their key features necessary for distinguishing models of co-management (i.e. stakeholder positions, power base, model of representation, mechanisms of social interaction). The four features that differentiate our framework from previous work are:

- i. a focus on the governance of policy delivery or implementation. This ensures a close practical and conceptual link between co-management (usually investigated at the delivery end) and environmental governance (usually focused on government's multifaceted role in environmental policy).
- ii. an in-depth investigation of the bottom-up perspective to governance, thus continuing the focus on delivery rather than policy. Which means that tensions between central and decentralized state are not prevalent.
- iii. not limiting our actor set to the traditional state, market and civil society trio, ensuring a nuancing of the players, their presentation and roles. Our actor set focuses on common players in co-management, i.e. the government or state (S), private organisations and groups including non-government bodies, private trusts, companies and environmental groups (P) and society or community (C)..
- iv. we consider the role of all actors equally, not separating 'government actors' from other stakeholders. This reinforces the notion that co-management is essentially about the balance between all actors, with no privileging of government, over other actors.

Table 2. Models of co-management governance structure and key features.

	Model 1 - Control	Model 2 - Coordination	Model 3 - Collaboration
			
Stakeholder positions	Stakeholder autonomy determined by state	Autonomy of stakeholders within predetermined boundaries	Self governing entities determine the involvement of all stakeholders
Power base	Authority of state,	Competitiveness; contracts & legal resources	Self-sufficient (autonomy) leadership and social networks
Model of representation	Pluralist (national election & lobbying)	Corporatist (formalized stakeholder arrangements)	Partnership (participatory stakeholder governing arrangements)
Mechanisms of social interaction	Top down; command and control	Actors decide; autonomously about interactions	Bottom up: social learning's, deliberations and negotiations
Delivery	State	State, contracted + volunteers	Shared between stakeholders
<i>Example</i>	<i>Booligal Station</i>	<i>Yanga</i>	<i>Mungo</i>

State (S), private organisations and groups (P) and community (C)

This means that our framework for examining governance co-management has five characteristics.

1. Actor positions; identifying the types of actors involved, who initiates action and how the actors relate to each other (see e.g. Driessen et al., 2001 O'Toole and Montjoy, 1984).
2. Power base; the formal and or informal basis of power in the governance structure (see e.g. Shove and Walker, 2007).
3. Model of representation; how actors interact and engage in the governance structure (see e.g. Glasbergen and Groenenberg, 2001)
4. Mechanisms of social interaction is how decisions are made in practice (see e.g. Hanf and Scharpf, 1978).
5. Delivery; outlines who is responsible for, and undertakes, the majority of on-ground activities for conservation (see e.g. Pomeroy and Berkes, 1997)

Model 1 – Control. This model highlights the seemingly deliberate isolation of the actors from each other, with the state controlling decision-making through predominantly discrete dialogue with individual actors/interests. In the control model, the State uses its discretionary power as the legal manager of the protected areas to control decision-making, including controlling who is involved, when and to what extent. While such an approach may seem unnecessarily hierarchical in a mature democracy such as Australia, this model has significant benefits and limitations that need to be recognised before one should unduly discount its merits.

First, the control model is a legitimate model within the regulatory frameworks that underpin protected area management, albeit not the preferred approach when broader development goals are considered (i.e. NSW 2021). Second, the control model observed was occurring in Booligal Station National Park, a relatively new protected areas, where no management plan has been prepared, and resource availability was limited (e.g. staff expertise and time). Although such circumstances could benefit from a more participatory approach to actively shared resources critical for efficient and effective park management (Eversole and Martin 2005, Whelan and Lyons 2005, Woolcock and Brown 2005), protected area managers in this case were simply not able to undertake such participatory activities because of the significant resourcing required and the priorities of other park management activities (e.g. control of weeds, fire etc.). Third, the control model, because of its constrained nature, should encourage a fast decision-making process, and thus enable proactive protected area management through the timely completion of management plans and operational documents,

although this has not occurred in this instance, due to the rapid expansion of protected areas in the region and the resourcing constraints.

In our case study of Booligal Station National Park we can see that there is a need for adequate resources, transparency, and accountability for such a model to be effective. The lack of progress has raised significant community concerns regarding the capacity of NPWS to effectively manage the lands, claims which drive the perceived necessity of a more participatory approach to protected areas management in the region that enables positive management outcomes.

Model 2 – Coordination. Unlike the control model, this model deliberately encourages dialogue between the state, the community and private organisations although the state is controlling the dialogue at all times. This approach is more participatory than the control model, actively encouraging inclusion in decision-making from other actors, while retaining final decision-making power at all times. Actors have the opportunity to negotiate decision-making outcomes within the often formalised terms of reference they have been provided, reflecting a networked approach to governance. This approach provides opportunities for localised interests to be brought to the decision-making table and debated, presumably, in a considered manner. However the central control of the state remains with the state making the final decisions based on actor feedback.

Such an inclusive approach reduces tensions around the capacity of NPWS to manage the lands, through opportunities to form relationships, transparency of management objectives and constraints, and an element of community ownership of governance decisions (Dare et al. 2011, Hailey 2001, Mascarenhas and Scarce 2004). This is clearly shown in Yanga, with a preference to employ locals to extend the network and influence of the park into the broader community (e.g. Balranld Inc and local schools). The retention of ultimate control by the state would be perceived by some as a negative, despite the regulatory framework supporting this role, driven by ongoing negative perceptions regarding the intent and legitimacy of National Park objectives within the regional economy. This model requires the willingness of actors to be at the decision-making table with the knowledge that they don't actually have the final say in decisions. Such an arrangement would require a level of trust in the state and, hence, such arrangements may take some time to deliver after initial land acquisition, time for community members and interest groups to adjust, refocus and move beyond the initial angst and uncertainty.

Model 3 – Collaboration. This model represents the most inclusive form of co-management, whereby formalised partnerships are established amongst the actors to govern park management. Such participatory governance partnerships deliberately take control away from the state, instead dispersing control throughout the partnerships,

albeit with caveats regarding public accountability and compliance with legislative requirements etc. Such collaborative approaches, when functioning effectively, encourage mutual learning and deliberately seek the inclusion of a broad range of interests to generate 'better' decisions (Creighton 2005, Dare et al 2011, Eversole and Martin 2005). However, collaborative processes are often resource intensive can take considerably longer (Beder 2006, Borrini-Feyerabend and Tarnowski 2005) and, hence, are not suitable for all contexts. These constraints of collaborative management highlight the importance of the careful selection of co-management model. Collaborative processes require a high level of commitment from all parties for both effective governance and effective management processes. Such commitment may only be established once initial community concerns regarding broader impacts of land acquisition and benefits of protected areas are adequately addressed and hence legitimacy of protected areas and confidence in the capacity of NPWS is attained.

The Mungo National Park is a good example of this model of co-management with high levels of engagement, activities and shared decision making. Although this has led to long lead times in decisions being made and a more inclusive community engagement in the final solution, e.g. taking 2-3 years to decide on how to incorporate local culture in interpretation signage.

What models of co-management mean for outcomes

The models of co-management presented above highlight the multiple actors and their possible roles in protected area co-management. The governance, and consequently the management, of protected areas is not the sole realm of state based managers such as the NPWS. Modern democratic expectations, government policy and strategic goals, and resource constraints (including time, money and expertise) highlight the need for multiple actors to be included within protected area governance, especially in remote and regional areas which are typically under resourced and facing significant development pressures (e.g. climate change, diminishing profitability, demographic changes).

It is important to recognise that all the models discussed occur within the same legislative framework of protected area management. Keeping the technocratic framing constant across the three case studies shows the breadth and diversity of possible co-management arrangements in implementation. It also continues to highlight the role of the state in setting policy objectives that prioritise conservation outcomes, objectives which are often best delivered through a more inclusive localised approach. Each protected area sits within a local community with its own cultural heritage and development story. These local stories affect their approach to protected area management, often a new land use forced upon them, with perceived negative consequences for their community's future development, livelihoods and sustainability.

These stories need an opportunity to be rewritten and reframed to become recollections that enable optimistic or at least constructive outcomes for the communities and for the environment. Through a deliberate, transparent and inclusive co-management approach, conservation outcomes can be achieved in a more effective manner with less community backlash and more community buy-in.

The development of this framework is to inform future management of protected areas, particularly in NSW, Australia, but also in the broader context of local communities and their interactions with protected areas globally. It occurs at a time where there is increased pressure from terrestrial protected areas to accommodate divergent uses, values. For example recent discussion has occurred in NSW regarding national parks being used for hunting and grazing (New South Wales Legislative Council, 2013). The way proposed to deal with these new and alternate uses of protected areas has been to state that co-management will be used to deal with competing uses. However, as we show depending on the model of co-management there may be no, slow or harmonious resolution to this issue.

This paper is limited by its cases and its framing. This framework is developed for terrestrial protected areas, however we note that whilst co-management has been very successful in marine areas, the level of nuancing and implications for actors has not been fully explored, as we have done here. Perhaps this is an area for future research that links the terrestrial and marine co-management models. Additionally more work needs to be done to explore the various models of co-management in practice to help explain why models work in some instances and not in others. This paper does not adequately explore the range of implications of co-management associated with broader policy development, network governance, or even participatory management. Rather the paper provides a basic description of the various models of co-management in practice and opens up the space for more focused debate on the implications of such approaches in the governance, and management, of public lands for conservation purposes.

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